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CASE REPORT

Late Rupture of Femoropopliteal Dacron Grafts: a Rare Complication

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Introduction

After the introduction of Dacron grafts in 1967 there have been reports of complications including infection, suture line rupture, restenosis and aneurysm formation.[1–3]

We present three patients with an uncommon complication.[4,5] Approximately 6 years after implantation of a femoropopliteal bypass graft (Dacron) we diagnosed a pseudoaneurysm due to a rupture in the prosthesis, necessitating surgical intervention.

Case Reports

Case 1

A 62-year-old woman received a knitted Dacron femoropopliteal bypass graft for disabling intermittent claudication in 1986. Three years later revision of the graft was necessary due to a proximal stenosis. She was readmitted in 1992 with a tumour (4 cm) of her right upper leg. Ultrasonography and angiography confirmed a false aneurysm in the middle of the prosthesis. Part of the graft was replaced by a Dacron interponate.

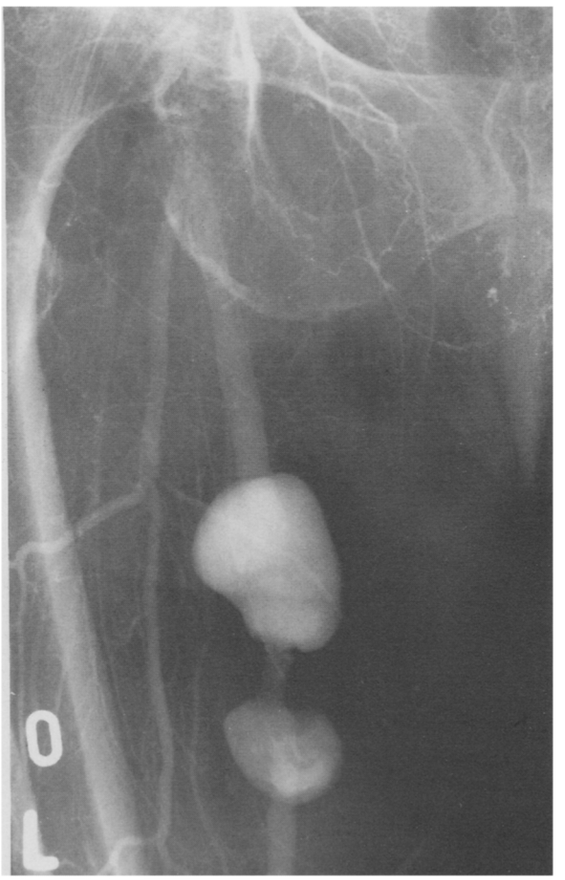

Fig. 1. Angiography of iliac-femoropopliteal prosthesis. Two aneurysms are located in the middle part of the graft.

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Case 2

A 61-year-old woman underwent femoropopliteal bypass grafting (knitted Dacron prosthesis) in 1985 for intermittent claudication. In 1992 she was admitted with a false aneurysm, 5 cm distal from the proximal anastomosis. The proximal part of the graft was replaced with a new Dacron prosthesis.

Case 3

In 1985, a 64-year-old woman underwent an aortoiliac bypass for disabling claudication. She received a knitted Dacron iliac-femoropopliteal bypass graft in 1986 because of stenosis at the left aortoiliac anastomosis. In 1993 she developed a tumour of her left leg. Ultrasonography and angiography showed two aneurysms located in the middle part of the graft (Fig. 1). She underwent replacement of the femoropopliteal bypass.

Discussion

We reported three patients who developed a false aneurysm due to a defect in a knitted Dacron prosthesis. None of the prostheses were externally reinforced. In all cases 6 to 8 years after implantation of the Dacron bypass, the patients developed a tumour located at the site of the graft. Ultrasonography and angiography confirmed a false aneurysm of the graft, necessitating its replacement. The first two grafts were sent to the manufacturer who had them analysed by Prof. Guidon at the laboratory of experimental surgery at the Laval University of Quebec, Canada. The third graft was analysed by Prof. Jeruzalem in the Medical Research Laboratory in Nijmegen, The Netherlands. Similar results were obtained in both centers:

In all three cases macroscopic analysis showed the rupture to be located in the middle of the prosthesis. The intraluminal wall surface at the site of rupture was significantly thinner compared to that of the surrounding graft wall.

Histological examination showed intraluminal deposits of mainly fibrin and some collagen fibers. There were no endothelial cells present. There were no signs of bacterial infection.

Analysis of the graft material revealed a clear difference between the ruptured portion and the proximal and distal ends of the graft. In the ruptured part the graft fibers showed irregular disruption.

Microscopic examination revealed three patterns of filament alternations (Fig. 2–4).

(1) Localised thinning and distortion of cross-sectional shape.
(2) Localised bending and twisting deformation of filaments.
(3) Transverse transection of filaments.

The manufacturer suggested that the filament alter-

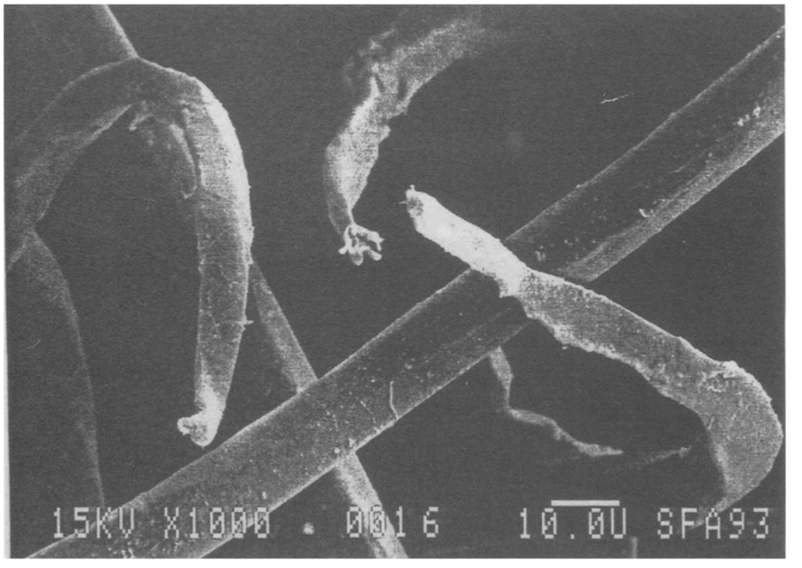

Fig. 2. SEM photomicrograph of broken filament ends showing localised thinning and distorsion of cross-sectional shape.

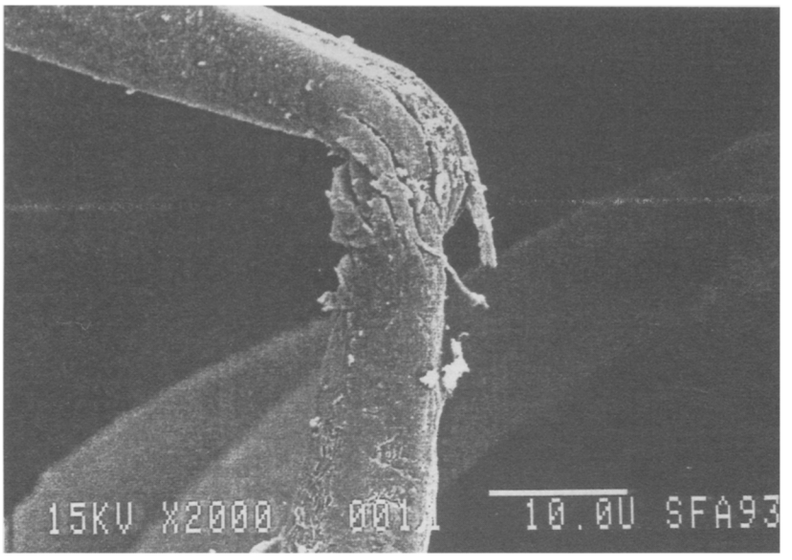

Fig. 3. SEM photograph of damaged filament showing localised bending twisting deformation

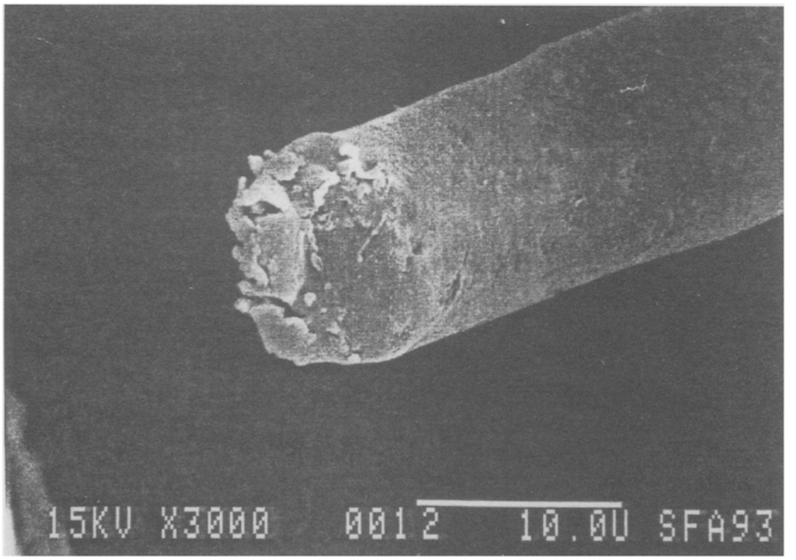

Fig. 4. SEM photograph of broken filament end showing a transversal transection.

nations were due mainly to iatrogenic causes; pointing specifically to clamping the graft to tunnel it through the tissue. However, this is not consistant with the site of the rupture which is located in the middle of the graft. We agree with the literature[4] that a manufacturing failure of the graft can not be excluded.

In conclusion: Graft rupture in a knitted Dacron femoropopliteal bypass graft, leading to a pseudoaneurysm, is a rare complication. There seems to be a risk-free period of 5 years after implantation. It would be prudent to assess the whole graft after 5 years using ultrasound and not to confine the examination to the anastomotic sites.

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